MISCELLANEOUS NOTES ON AUSTRALIAN DIPTERA. VI.

DOLICHOPODINAE.

By G. H. Hardy.

[Read 26th July, 1939.]

The Australian species of Dolichopodidae are referred to eight subfamilies, of which one, the Chrysosomatinae (these Proceedings, lx, 1935, 248), has been dealt with in this series. There may be some doubt as regards the subfamily designation of the genus *Mesorhaga*, known to me only from the female; but the rest of the Chrysosomatinae are clearly differentiated from the Dolichopodinae, with which may be merged the Neurogoninae and Medeterinae. The following should now be added to my key by inserting the figure "8" (Hardy, 1935, 248) in the place of "other subfamilies".

8. Hypopygium exposed, large or very large, normally reflexed so as to be carried under the abdomen, or, if placed apically, opening downwards; frequently highly ornamented. Postocular vestiture usually limited to a single row of bristles and the summit is usually slightly depressed and apparently the antennae are always situated very high on the head, with the third segment always short and the arista dorsally placed. Although the venation is variable, this subfamily incorporates all forms outside Chrysosomatinae that have the median vein much upcurved, including those with this vein less strongly tending towards the radial, and all that have an appendix on this vein. The acrostichal bristles are always biserial as far as yet known ..... Dolichopodinae. 9

Hypopygium small, hardly noticeable or concealed. Acrostichals biserial, uniserial or absent. Summit never depressed between the eyes, no appendix to the median vein which is never bent to a marked degree ..... *Other subfamilies*

9. Thorax with a large depressed area adjacent to the scutellum 11

Thorax without such a depression (Dolichopodinae of authors) 10

10. Posterior metatarsus with upstanding dorsal bristles. The upper median vein formed with two sharp bends close together, each at right angles and each with an appendix. Hypopygium long, the lateral view excluding lamellae being one and a half times longer than broad. (Wing character applies to the Australian species and is not general) ..... *Dolichopus*

Posterior metatarsus without upstanding dorsal bristles. The upper median vein bent to a variable degree, and directed to lie converging towards the radial, reaching the margin usually before the wing apex ..... *Paraclius*

11. Legs elongate; abdomen gently tapering, rather large species (Neurogoninae of authors) 12

Legs of normal length, abdomen short and strongly conical, not exceeding the length of thorax. Small species (Medeterinae of authors) 13

12. Upper median vein strongly upturned and reaching margin before wing apex. Hypopygium reflexed ..... *Neurogona*

Upper median vein only slightly curved and reaching margin beyond wing apex. Hypopygium not reflexed ..... *Arachnomyia*

13. Anal vein present ..... *Medetera*

Anal vein absent ..... *Thypticus*

Genus Dolichopus Latr.

Only one species is known from Australia; it has venation like that of *D. zickzack* Wied., and is represented in the collection before me by a male from

Southport and a female from Brisbane, labelled with a query as being this species, which reaches from Java to the Mandated Territory of New Guinea. The specimens differ, however, by the larger size (5 mm.) and by the venation which is more complete than that noted by Becker, who indicates that the fifth vein is short and the second sinuous, whereas these veins are complete and practically straight respectively on the present specimens. Other small differences occur, but are hardly enough to show with certainty that the Queensland specimens are more than a variation.

Genus Paraclius Bigot.

Six species, perhaps seven, are before me. Some correspond rather well with described forms, but three are certainly undescribed. One species is so different in head characters that I place it here until its true valuation becomes known, there being no genus yet proposed suitable for its reception.

Key to species of Paraclius.

1. Face of male very narrow, narrowest in centre and entirely white. Face of female broader, slightly converging to oral margin or practically parallel, with a pulverulent white covering usually dense. Posterior metatarsus not quite as long as second segment, usually much shorter. Hypopygium normal 2

   Face on both sexes equally broad and bottle-shaped, yellowish. Posterior metatarsus as long as second segment. Upper median vein gently curved. Hypopygium more swollen than normal ..... *latifacies*, n. sp.

2. Legs mainly black. Upper median vein bent to a rectangle. Posterior metatarsus two-thirds as long as second segment on male, nearly equal on female .... *neglectus* Becker

   Legs mainly yellow 3

3. All coxae black. Median vein gently curved. Posterior metatarsus on female not quite equal to the second segment (♀) ..... *australiensis* Parent

   Anterior coxae yellow or mainly so 4

4. Upper median vein sharply bent, approaching rectangular. Posterior metatarsus two-thirds length of second tarsal segment, or longer when stated as such below 5

   Upper median vein gently bent. Posterior metatarsus half length of second (♂) ..... *cilipes*, n. sp.

5. Intermediate tibiae with two anterior and four posterior dorsal bristles .... *darwini* Parent

   Intermediate tibiae with three anterior and two posterior dorsal bristles .... *obtusus*, n. sp.

   Intermediate tibiae with three anterior and four posterior dorsal bristles. Posterior metatarsus only slightly shorter than second segment (♀) .... *trisetosus* Parent

The characters of *P. australiensis* and *P. darwini* are taken from published descriptions. *P. trisetosus* Parent (♀) before me approaches *obtusus*, n. sp., and has the median vein similarly bent, a little more so than shown by Parent. In the key the character "median vein gently bent" refers to change in direction of less than 45 degrees as shown in Parent's figure 19; those "approaching rectangular" are as in his figures 20 and 21.

It is worth noting that on *P. neglectus* Becker the proportional length of the posterior metatarsus differs in the sexes, a character likely to be repeated on *australiensis* and *trisetosus*, which are known only from the female. The two latter species are likely to be closely related, but I am still uncertain if the *trisetosus* (from Gordonvale and Palm Island) before me is correctly identified; there are minor differences suggesting an allied species, and the males are needed to ascertain this. Parent's species are described in *Ann. Soc. Sci. Bruxelles* (B), liii, 1933, pp. 184–5, figs. 19–22.

PARACLIUS NEGLECTUS Becker.

Becker, *Cap. Zool.*, i, 1922, 16; Hardy, *Austr. Zool.*, vi, 1930, 134; Parent, *Ann. Soc. Sci. Bruxelles* (B), lii, 1932, 57.

Becker's description is very short, is based upon a specimen from Darwin (Palmerston is the older name) and agrees rather well with Brisbane specimens before me. These have, on the anterior tibiae, three anterior and two posterior strong bristles on the dorsal side and one posterior on the ventral side. The intermediate tibiae have four anterior and four posterior strong bristles dorsally and one ventrally. The posterior tibiae have four very strong bristles alternating with less strong ones, making seven in all anteriorly and four posteriorly on the dorsal side and two ventrally. The bristles mentioned are liable to variation and exclude subbasal bristles that may appear strong but do not reach the size of those counted, and the apical bristles are also excluded; Becker makes no mention of these.

Hab.—Northern Territory; Queensland: Brisbane, 3 ♂, 3 ♀, September and October, 1928 and 1930.

PARACLIUS OBTUSUS, n. sp.

♂. Frons metallic-green, very slightly covered with a pulverulent white. Antennae yellowish, third segment and arista mainly blackish. Postocular bristles mainly white. Thorax metallic-green with red reflections mainly between the acrostichals; there is a limited covering of pulverulent white and a strong black colour shows on the area adjacent to the head, above the wings and at sides of scutellum. Abdomen also green with black margins to each segment, anteriorly and posteriorly, and a strong trend towards an interrupted black median stripe. The blackish hypopygium has its lamella rather heart-shaped when seen laterally. The legs are almost entirely yellow, the basal two-thirds of the intermediate and posterior coxae only being black. The anterior legs have the normal row of apical bristles on the coxae, one small subapical on the femora and on the tibiae with three rows of dorsal, three bristles to each row, besides the two apical ones, but all these are rather small; the metatarsus is about as long as the combined and equal following segments, whilst all these tarsal segments combined equal the length of the tibiae. The intermediate legs have many bristles on the coxae, one on the anterior surface of the trochanters, a row of very thin ventral bristles and a stout one on the anterior surface of the femora, the latter placed subapically; the tibiae have, besides a pair of small subbasal bristles, three anterior and two posterior long bristles on the dorsal surface, and five subapical bristles; the metatarsus is longer than the second tarsal segment and all segments combined are a little longer than the tibiae. The hind legs have a single bristle on the coxae, another on the trochanters, a ventral row and an anterior dorsal bristle on the femora; the tibiae have two small subbasal bristles, three anterior, four posterior and one subapical bristle; the metatarsus is two-thirds the length of the second segment which itself equals the combined length of the remaining segments, and all together are a little longer than the tibiae. The upper median vein is bent to a sharp angle, not quite a rectangle. Length about 5 mm.

♀. Similar, with the normal wide face parallel-sided.

Hab.—Queensland: Brisbane, 3 ♂, 5 ♀, August to November, 1928, 1929 and 1931.

Closely related to *P. darwini* Parent, according to description, but that species has a somewhat triangular lamella fringed on one side by long hairs, whereas on

the present species the lamellae are somewhat heart-shaped, attached broadly at the base and the hairs are uniformly short throughout. That process, with three diverging hairs at the apex, is shown by Parent to be large, but is small on the present form, which is distinguished also by the bristles of the tibiae as given in the key. Characters mentioned by Parent, and not included above, are the same in both species.

PARACLIUS LATIFACIES, n. sp.

♂. Frons and postocular region metallic-green with a slight covering of pulverulent yellow. Face as broad as that on the female, completely covered with a yellow pulverulent overlay including the clypeus. The eye-margins converge from the frons to the upper part of the face, then diverge towards the oral margin, where they again converge, giving the face a somewhat bottle-shaped outline. The reddish-yellow antennae have the third segment and the arista black; the proboscis, palpi and upper bristles of the head are black, the lower bristles are white.

Thorax metallic-green with a large dorsal area coppery and the acrostichal bristles extend further than is normal with the genus. There are six dorsal central bristles and two large widely separated scutellar bristles, and a small bristle outside these making a second pair. Other bristles seem normal. The metallic-green abdomen has coppery reflections showing on its apical area, and along the apical margins of each segment. A white pulverulent overlay covers almost the whole abdomen, but becomes strong laterally. The swollen black hypopygium seems not quite normal to the genus and the lamellae are oblong, leaf-like, attached by a slender stalk to one corner. All the coxae are dark (greenish covered with a pulverulent white) and with normal chaetotaxy; this colour extends onto the posterior trochanters, but otherwise the legs are yellow. Omitting the small dorsal subbasal bristles and the apical, there are, on the anterior tibiae, three anterior, two posterior dorsal bristles and two ventrals; on the intermediate tibiae there are four each anterior and posterior dorsals, and four each anterior and posterior ventrals; on the posterior tibiae four each anterior and posterior dorsals and five or six, mostly small, white ventrals. The anterior tarsi are but slightly longer than the tibiae, with the metatarsus as long as the four following segments. The intermediate tarsi are longer than the tibiae, with the metatarsus about equal to the two following segments. The posterior tarsi are again longer than the tibiae, with the metatarsus equal in length with the next segment. The wings have the upper median vein gently curved and, although the curve is slight and the vein straightens, yet the vein ends before the wing apex as in *darwini* and *obtusus*.

♀. Similar to the male.

Hab.—Queensland: Brisbane, 2 ♂, 5 ♀, August and September, 1928.

With the multiplicity of bristles on the tibiae, there is a tendency to add or miss a bristle here and there, but in the main the character shows little variation. If a bristle be suppressed, a hair each side may increase in size, making two apparent bristles where one is normal. Such fortuitous bristles are liable to mislead and need to be guarded against.

PARACLIUS CILIPES, n. sp.

♂. Frons and face completely covered with pulverulent white, the latter narrow and normal. Antennae and arista blackish-brown, the latter subapically placed. Postocular bristles black. Thorax green with some reddish reflections and hardly any pulverulent overlay. Thoracic bristles include six dorsocentral and

two widely separated scutellar bristles. Abdomen green with black border on the base and apex of each segment, and a pulverulent white spot laterally. Hypopygium only as long as wide (lateral view), ending in a pair of broad lamellae, somewhat square in outline. Anterior coxae yellow, the others darker, at least on the basal two-thirds, otherwise the legs are almost completely yellow. The intermediate and posterior coxae have one outstanding bristle apart from the normal marginal bristles and the hairs; the trochanters are without observed bristles. Posterior femora with one bristle situated antero-dorsally at three-quarters the length; otherwise only apical bristles are occasionally present. Anterior tibiae with three pairs of bristles on the dorsal side, varying to include a fourth. Tarsi very attenuated, with the apical segment ornamented; metatarsus one and a half times the length of second segment and about as long as the third and fifth, the fourth very slender, about as long as the first three together, and the fifth unusually long with six cilia on the anterior edge, tapering towards the apex, white on the apical half and claws hardly visible; the total tarsal length is about equal to that of the femora and tibiae combined. The intermediate tibiae have four anterior and four posterior bristles on the dorsal side besides a pair of subbasal bristles and a complete complement of apical ones; there are also four ventral bristles, but all these are apparently subject to variation; the tarsi are subequal, with the segments combined a little longer than the tibiae. The posterior tibiae seem to have normally a pair of small subbasal bristles followed by three anterior and four posterior on the dorsal side and no ventrals, but a set of apicals is present; the metatarsus is about half the length of the second segment and the others normal; the second to fifth segments equal the length of the tibiae. The upper median vein is gently bent, running thence rather straight towards the median, meeting the margin a little before the wing apex. Length about 5 mm.

Hab.—Queensland: Brisbane, May, 1935, 3 ♂.

From the description of *P. australiensis* Par., described from the female only, the present form is distinguished by its yellow anterior coxae, the straight section of the median vein, and other differences which might be sexual, but with the different chaetotaxy as described above, and the posterior metatarsus being shorter than the second segment (not almost equal to it), it seems unlikely that the two are conspecific. There is, however, a close ally, *P. ornatipes* Parent (*Treubia*, vii, suppl., 1932, 315, figs. 6 and 7), of which both sexes are known, and Parent's description of it and that given above are the same in essential points, whilst his Figure 6 applies to both; the differences here lie in the posterior metatarsus and the curvature of the upper median vein; Parent's species is from Buru.

Genus Neurogona Rond.

Rond., *Dipt. Ital. Prod.*, i, 1856, 142; Becker, *Cap. Zool.*, i, 1922, 61; Hardy, *Austr. Zool.*, vi, 1930, 134; Parent, *Ann. Soc. Sci. Bruxelles* (B), lii, 1932, 163, 174.

Becker described a species of *Neurogona* from Formosa, recording it also from India, Ceylon and Assam; in addition, he quotes a pair from Queensland (Kuranda), all under the name *denudata*. To this Parent has added a species, male only, from Eidsvold in which he contrasts five characters differing from Becker's species. A species before me is from Brisbane and the Queensland National Park, agreeing with Parent's form, but differing in certain respects mentioned in the key; I do not know if it be truly distinct.

Key to species of Neurogona.

1. Ten pairs of dorsocentral bristles, with hairs between these and the acrostichals. The prescutellar depression is unmarked. Frons covered with pulverulent white. Hypopygium figured by Becker (fig. 44) ..... *denudata* Beck.
   Five pairs of dorsocentral bristles, the remainder reduced to hairs not distinguishable from those adjacent to the acrostichals. Prescutellar depression and disc of the scutellum blackish. Frons covered with pulverulent yellow. Hypopygium of the general form figured by Parent (fig. 77) 2
2. The lateral edge of the fifth tergite on male produced laterally, triangular. Hypopygium with an upstanding elongate slender process in accordance with Parent's description ..... *signata* Parent
   The lateral edge of the fifth tergite on male normal. Hypopygium without process. ..... sp.

Genus Arachnomyia White.

Proc. Roy. Soc. Tasmania, 1916, 252; Hardy, *Austr. Zool.*, vi, 1930, 134; Parent, *Ann. Soc. Sci. Bruxelles* (B), lii, 1932, 107 (in key).—*Pleuropygius* Parent, *Ann. Soc. Sci. Bruxelles* (B), liii, 1933, 186.

The synonymy is new. In his key, Parent gave characters for *Arachnomyia*, evidently based on White's description, which omits the prescutellar depression; he was thus misled, renaming the genus and giving characters that are identical with White's genotype, except for minor differences. There are three species before me.

Key to species of Arachnomyia.

1. Lamellae highly developed and highly ornamented 2
   Lamellae quite small, normal, with hairs, or at most with a furry covering 3
2. Posterior metatarsus half the length of the second tarsal segment .. *arborum* White
   Posterior metatarsus two-thirds the length of the second tarsal segment ..... *longipes* Parent
3. Posterior metatarsus half the length of the second tarsal segment. Anterior tarsi with the three apical segments flattened and ornamented ..... *ornatipes*, n. sp.
   Posterior metatarsus two-thirds the length of the second tarsal segment and only the two apical segments of the anterior tarsi are flattened, and otherwise not ornamented ..... sp.

Arachnomyia arborum White.

♂. Frons green with a strong covering of pulverulent white. Face white; the eyes practically meet at the narrowest point. Proboscis and palpi yellow. Postocular bristles white, antennae yellow, third segment missing. Thorax dorsally metallic-bronze with a green median stripe along the acrostichals. Four pairs of dorsocentral bristles anteriorly and a pair of large ones adjacent to the depressed area, which is white-covered. A row of strong prothoracic bristles, one humeral, one propleural, two notopleural and three others between the last and the dorsocentrals. Scutellum with a pair of widely separated marginal bristles. Anterior coxae yellow, the others blackish, the posterior ones with a lateral bristle, otherwise bristles are not prominent on such parts of the legs as are present on the specimen. Only one anterior leg is complete, showing femora and tibiae about equal in length, the metatarsus very long and, together with the second segment, about equal in length with the tibiae; subsequent segments decreasing in size and together slightly longer than the second segment.

The abdomen has four normal segments and the hypopygium is of the same form as on *longipes*, but there is no long bristle as shown in Parent's figure, whilst the lamellae, though laterally fringed, also apparently differ. The general design of this is reminiscent of the tail of a lyre-bird (*Menura victoriae*) owing to it

being feathery and of a general lyre-shape. The fifth abdominal segment is evidently present but retracted.

♀. Similar to the male, face uniformly narrow, and up to six dorsocentral bristles are present. Third antennal segment as long as wide, with the arista placed in the median position. Five abdominal segments present and two more incorporated in the telescopic ovipositor, all strongly tapering to a point. The anterior legs are similar to those of the male and the intermediate tibiae and tarsi are longer than the anterior ones, with four widely separated short ventral bristles on the metatarsus, which equals the length of the tibiae, and the second tarsal segment is longer than the two apical ones combined. The posterior metatarsus is half the length of the elongated second and the median tibial bristle is present.

Hab.—Tasmania. 1 ♂, slightly damaged, and 2 ♀, the allotype and a paratype; from Hobart and Dunalley, February and March, 1915, 1917 and 1918.

Arachnomyia ornatipes, n. sp.

♂. Conforming very closely to the genotype, this species differs remarkably in the hypopygium which is rather small and has the lamellae small with a fur-like covering. It differs also in the last three segments of the anterior tarsi being highly ornamented, the intermediate tibiae with four widely separated bristles on the anterior side and a bristle each on the trochanters and coxae; otherwise the legs conform to those of the genotype. The anterior tarsal segments have the last three flattened, with a fringe of long curly hairs on the edge of one, and short straight hairs on the edge of the two apical ones.

Hab.—Queensland: National Park, February, 1921, 1 ♂ only.

Genus Medetera Fisch.

Key to species of Medetera.

1. Upper median vein parallel with the radial 2
   Upper median vein strongly converging towards the radial 3
2. Thoracic bristles white; only two scutellar bristles ..... *extranea* Becker
   Thoracic bristles black; four scutellar bristles ..... sp.
3. Posterior metatarsus three-fifths the length of the second tarsal segment ..... *nigrohalterata* Par.
   Posterior metatarsus one-half the length of the second tarsal segment .. *palmae*, n. sp.
   Posterior metatarsus one-third the length of the second tarsal segment .. *comes*, n. sp.

Medetera palmae, n. sp.

♂. Frons, face, clypeus and palpi greenish-black; occiput, thorax and coxae similarly coloured but tending to shine more, except on the depressed area adjacent to the scutellum, which retains a dense amount of the whitish pulverulent overlay that covers these parts; the abdomen is also similarly covered but quite shining. Antennae varying to black, but normally the two basal segments are reddish and the arista is apically placed. The proboscis, all bristles except the white postoculars, the femora except apex, and the hypopygium mainly, are black. The anterior tibiae are normally stained with black, but otherwise the legs are yellow with occasional black apices to segments. The halteres, the squama with its fringe, and the wing veins are yellow.

Four apical dorsocentral bristles are large, the others are of equal size with the acrostichals. Two widely separated large scutellar bristles occur, each with a smaller bristle situated on the outer side along the scutellar margin. The intermediate tibiae have a well developed anterior bristle, blackish-yellow, at

one-third its length, and a smaller one nearby on the dorsal side. The posterior tibiae have a light dorsal subapical bristle usually visible. The anterior tarsi are subequal, the intermediate metatarsus is equal to the length of the remaining segments combined. The posterior metatarsus is half the length of the second segment, as also is the third. Wings, as in *nigrohalterata*, have the upper median vein first bending towards the radial, thence concave, but becoming convex beyond, making it slightly sinuous.

♀. Similar to the male.

Hab.—Queensland: Brisbane, 10 ♂, 7 ♀ mainly collected from the trunk of a palm tree in my Sunnybank garden. I have known the presence of *Medetera* on this palm tree for many years, but on close inspection I find there are two species with the habit, the companion being described below. Besides the characters quoted, the species differ from each other in the male terminalia, the present one being large and swollen at its base, the other similar in length but not swollen. The two descriptions are based on material collected during August and September, 1937, after which month they become scarce.

MEDETERA COMES, n. sp.

♂. Face, clypeus and palpi metallic-green varying to blue and purple. Antennae black, occiput, the thorax dorsally, and to a certain extent the abdomen above are all coppery, elsewhere green. The whitish pulverulent overlay is dense between the acrostichals, forming a stripe there which dilates over the depressed area near the scutellum. The legs are black with traces of yellow on trochanters, knees, and sometimes elsewhere. Dorsocentrals with only the two last bristles strong. The anterior tarsi have the second segment slightly longer than the metatarsus, the intermediate tibiae have one bristle on the anterior surface at about one-third its length, none above, and the tarsi have the first two segments equal. The posterior tibiae are apparently without the subapical bristle and the posterior metatarsus is one-third the length of the second segment, the third segment a little in excess of half the second. Wings like those of *nigrohalterata*, except that the upper median vein is uniformly convex throughout its length. In other characters the species agrees with *palmae*.

♀. Similar to the male.

Hab.—Queensland: Brisbane, 2 ♂, 5 ♀, September to October, 1937, in my garden at Sunnybank.